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Food·Drug·Cosmetic Law Journal

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British Pure Food Centenary 1960

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A COMMERCE CLEARING HOUSE PUBLICATION

PUBLISHED IN ASSOCIATION WITH THE FOOD LAW INSTITUTE, INC.

The editorial policy of this JOURNAL is to record the progress of the law in the field of food, drugs and cosmetics, and to provide a constructive discussion of it, according to the highest professional standards. The FOOD DRUG COSMETIC LAW JOURNAL is the only forum for current discussion of such law and it renders an important public service, for it is an invaluable means (1) to create a better knowledge and understanding of food, drug and cosmetic law, (2) to promote its due operation and development and thus (3) to effectuate its great remedial purposes. In short: While this law receives normal legal, administrative and judicial consideration, there remains a basic need for its appropriate study as a fundamental law of the land; the JOURNAL is designed to satisfy that need. The editorial policy also is to allow frank discussion of food-drug-cosmetic issues. The views stated are those of the contributors and not necessarily those of the publishers. On this basis, contributions and comments are invited.

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FOOD DRUG COSMETIC LAW JOURNAL

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REPORTS

TO THE READER

About the Authors

This issue of the *Food Drug Cosmetic Law Journal* is devoted to the highlights of the proceedings of the British Pure Food Centenary, which was held in London, September 20-23, 1960. **Franklin M. Depew,** president of The Food Law Institute, attended this centenary as a vice president of honor. The FLI was the only organization outside the British Empire, with the exception of the Food and Agriculture Organization of the United Nations, to be so honored by official representation.

Chairman of the Pure Food Centenary Executive Committee was **A. J. Amos,** a partner in D. W. Kent-Jones & A. J. Amos. He is joint author of *Modern Cereal Chemistry,* and is honorary treasurer and past vice president of the Society for Analytical Chemistry. **Ernest Godbold** was the member of the organizing committee who was in charge of public relations.

The Act for the Prevention of the Adulteration of Food and Drink, 1860, and its influence on the purity of the world's food was the topic discussed by **J. H. Hamence,** president-elect of the Association of Public Analysts. He emphasized that in spite of modern developments, the price of pure food is still eternal vigilance.

The manufacturers' contribution to pure food for the people was described by **E. B. Hughes,** chief chemist, J. Lyons & Co. Ltd.

On September 22 two papers were presented at the conference: **J. G. Malloch,** scientific adviser to the High Commissioner for Canada, spoke on "Pure Food and the British Commonwealth." He was followed by the Deputy Director-General of the Food and Agriculture Organization of the United Nations, **Norman C. Wright,** whose topic was "International Aspects of Pure Food and Pure Food Legislation."

National problems of pure food and pure food legislation were on the agenda for the morning session of September 23. Canada's problems were discussed by **C. A. Morrell,** Director of the Food and Drugs Directorate, Department of National Health and Welfare, Canada. Professor **F. H. Reuter** of the University of New South Wales told how Australia has met problems which stem from her geographical, historical and political conditions. The third paper of the morning was one by **George P. Larrick,** United States Commissioner of Food and Drugs. In his absence the paper, which emphasized the fact that the United States is in an era of changes in the production and distribution of food, was read by **John L. Harvey,** Deputy Commissioner of Food and Drugs.

The morning session was concluded with a paper on "The Integration of Food Research" by **A. C. Frazer,** who is professor of medical biochemistry and pharmacology at the University of Birmingham.

WASHINGTON-

ACTION AND NEWS

In the Food and Drug Administration

Public Hearing on New Standards for Orange Juice Products.—The Food and Drug Administration has announced that a public hearing will be held at 10:00 a.m., January 30, 1961, on the new standards for commercially packed orange juice products, including undiluted and concentrated juices.

These standards were published in the *Federal Register* of March 1, but objections were filed which cannot be resolved without a public hearing, the FDA said. The standards are being held up pending the outcome of the hearing.

The standards as published would define the composition of each product and require that labels bear information that will identify and describe the kind of product being offered—for example, orange juice which has been heated to destroy enzymes and micro-organisms to make it keep longer would have to be labeled "pasteurized orange juice."

Commissioner George P. Larrick has concluded that the objections filed state reasonable grounds for a hearing on a number of issues, including the following:

(1) Whether the label designations called for by the standards constitute the common or usual names for the several products, and if not, what are the common or usual names?

The proposed names were as follows: orange juice, pasteurized orange juice, canned orange juice, sweetened pasteurized orange juice, canned sweetened orange juice, concentrated orange juice, sweetened concentrated orange juice, reconstituted orange juice, and sweetened reconstituted orange juice.

(2) Whether certain optional ingredients should be permitted in the various standarized products, and if so in what amounts and how should these ingredients be described in the standard and declared on the labels?

These include the following: tangerine juice, juice from "sour" oranges, orange oil, orange essence, orange pulp, artificial sweeteners, nutrient sweeteners, orange juice concentrate, reconstituted orange juice, liquid sugar sirup, and liquid invert sirup.

(3) Whether certain other restrictions on composition of the products and their methods of manufacture, and the label statements called for by the standards, are necessary for preventing deception and promoting honesty and fair dealing in the interest of consumers—for example, should a water extract of pulp from which juice has already been extracted be permitted in concentrated orange juice, and if so how should the product be labeled?

All persons interested are invited to attend the hearing and present evidence. Persons desiring to present evidence are urged to attend a prehearing conference for simplification of the proceedings and scheduling of witnesses. The prehearing conference will be held in Room 5131, Health, Education, and Welfare Building, 330 Independence Avenue, S. W., Washington,

D. C., beginning at 10:00 a.m. on January 16, 1961.

The hearing will be held in the main auditorium of the same building on January 30. William J. Risteau will preside.

Food Seizures in October. — Unfit foods seized in October totaled 225 tons in 57 federal court actions. October's total was relatively small in comparison with September's 1,682 tons. More than 115 tons of the 225-ton total were accounted for by grains and grain products contaminated by rodents and insects.

Decomposed frozen whole eggs were involved in three seizure actions totaling almost 20 tons. Approximately 15 tons of eggs were seized in Tennessee in the largest of these actions.

Forty-six tons of food were seized in warehouses on charges that it became contaminated as a result of insanitary storage conditions after shipment in interstate commerce.

Drug and Device Seizures. — The charge of false and misleading therapeutic claims was made in 11 drug and device seizures in October; other actions involved one product held under insanitary conditions, one charged to be a substandard preparation, and one action on a counterfeit drug.

The products of a New Jersey vitamin manufacturing firm were seized on the charge that the label made false and misleading therapeutic claims and that it failed to bear the required information regarding vitamin and mineral properties of the product. The firm is a subsidiary of a vitamin manufacturing corporation whose products were seized earlier this year on the same charge.

A "Hydro Massage" device which claimed to create "bosom beauty" was seized in Oklahoma City on the charge that its labeling contained false and misleading claims. Among the therapeutic claims made for the device were the elimination of waste material from the breast assisting its chemistry to function normally and the restoration of muscle and cell tissue to increase circulation and lessen the chance of disease. The FDA charged that this was contrary to fact. Seized in this action were 159 devices and accompanying literature.

Voluntary Actions by Industry.—In October about 285 tons of adulterated food were destroyed or converted to animal feed by industries voluntarily seeking to avoid violations of the law.

Flour totaling 37.5 tons became infested with rodents while in transit in a railroad car. Approximately 20 tons were found unfit for human consumption. These bags were denatured with fish oil and converted to animal feed.

Thirty tons of apples were destroyed when examination showed that 75 per cent contained worm damage and 6 per cent had rot.

A tomato packing firm in Indiana dumped 8.5 tons of tomatoes. Inspection had shown that 41 per cent of the firm's product contained rotten tomatoes.

The drug industry voluntarily destroyed $21,214 worth of drugs in ten actions. The largest of these involved $4,000 worth of drugs from a defunct drugstore which had been purchased at an auction by a dealer in distressed merchandise. Some of the drugs were in opened packages; others were outdated. Restricted drugs in some instances were not labeled to show that prescriptions are required for them. The defective merchandise was destroyed by crushing and burying at a city dump.

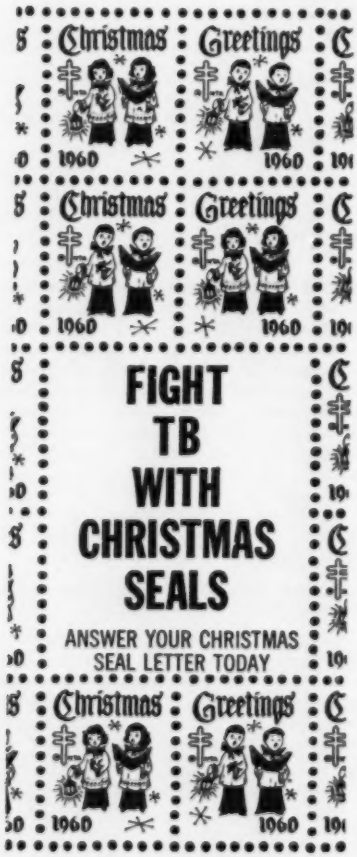
Thirty voluntary plant improvements totaled $3,252,421 in value.

Largest improvement in dollars value was a tomato packing plant in Ohio that spent $60,000. During the 1959 season this firm was overstocked with tomatoes, far beyond the plant's normal capacity. This surplus was found to be decomposing and fly infested. Before the new season started, new equip-

ment—including additional sorting and peeling lines, a new rotary cooker and new lighting—was installed. The building itself was improved by installing combination aluminum windows and repainting the interior.

Following an FDA inspection, an Atlanta bakery spent $3,000 on capital improvements and started a plant sanitation program costing $2,000 a year.

Voluntary corrective actions for the month of October totaled 174.



FD&C Red No. 1.—On November 22 John L. Harvey, Deputy Commissioner of Food and Drugs, signed an order to eliminate the use of FD&C Red No. 1, a water soluble coal tar color that is widely used in a variety of foods as well as drugs and cosmetics. It is not used in lipsticks.

Mr. Harvey said the action was taken because preliminary experiments have shown that the color produces liver damage in test animals and no safe use level has been established. He said that the test results did not provide a basis for concluding that the color could cause cancer. These tests, however, will be continued.

The FDA is immediately discontinuing certification of any further batches of this color and is cancelling outstanding certificates for all previously certified lots. According to the order, "the Commissioner of Food and Drugs, having concluded that ingestion of this color additive over a long period of time would be unsafe, and in order to protect the public health, hereby terminates the provisional listing of FD&C Red No. 1 for use in foods, drugs, and cosmetics."

At the same time the Commissioner found "that no action needs to be taken to remove foods, drugs, and cosmetics containing this color additive from the market on the basis of the scientific evidence before him, taking into account that the additive is not an acute toxic substance and that it is only used in small amounts in foods, drugs, and cosmetics."

The FDA said that the lowest amounts of Red No. 1 which have been shown to produce liver damage in test animals were many times greater than the amounts of this color that would be consumed in the human diet.

The FDA action is being taken under the new color-additive law, which places on manufacturers the burden of proving that colors are safe before they can be allowed in foods, drugs and cosmetics.

Vol. 15, No. 11 November, 1960

Food·Drug·Cosmetic Law
Journal

Foreword to the British Pure Food Centenary Issue

By FRANKLIN M. DEPEW
President, The Food Law Institute

THE FOOD LAW INSTITUTE is honored to devote this issue of the FOOD DRUG COSMETIC LAW JOURNAL to a report of the highlights of the proceedings of the British Pure Food Centenary, held in London on September 20-23, 1960.

Through the good offices of Dr. A. J. Amos, chairman of the Pure Food Centenary Executive Committee, and Ernest Godbold, member of the Organizing Committee and responsible for public relations, a general report of the events of the celebration has been made available to The Food Law Institute, together with summaries of the papers read at the paper-reading session. We are indebted to Dr. Amos and Mr. Godbold for supplying this material. The centenary proceedings are of great importance, in that they constitute not only an inspiring record of past achievements but also the expressions of outstanding food officials and scientists on the continuing need for sound food legislation and its proper enforcement throughout the world.

It was my privilege as president of The Food Law Institute to attend this centenary as a vice president of honour. The Food Law Institute was the only organization outside the British Empire, with the exception of the Food and Agriculture Organization of the United Nations, to be so honored by official representation. It was a source of personal enjoyment and satisfaction to me to attend all the various

events of this celebration. I visited with many good friends of The Food Law Institute and was gratified to learn at first hand of the great interest of our friends overseas in the objectives of the institute.

Also gratifying were the warm tributes paid by the centenary delegates to the late Charles Wesley Dunn, the former president of The Food Law Institute. Mr. Dunn was generously credited with being principally responsible for the idea and the plan of the centenary celebration.

An impressive reception was tendered by Her Majesty's Government to delegates of the Pure Food Centenary at Lancaster House, and a formal dinner was given in the London Guildhall. Each of these occasions blended formality with informality in a warm manner.

At the conclusion of the centenary, I had a rewarding and stimulating series of visits with a number of food and drug officers of international organizations and of various European countries. These visits will be the subject of a further report in a later issue of the FOOD DRUG COSMETIC LAW JOURNAL. **[The End]**

HEALTH FOR PEACE PLAN

"One of the most important missions of this Department, it seems to me, is to contribute to what is often referred to as the 'health for peace plan.' I am gratified, therefore, to note the progress of activities in the international health field as being carried out by two of the Department's agencies, the Public Health Service and the Office of Vocational Rehabilitation," stated HEW Secretary Arthur S. Flemming at a news conference on November 17.

"The funds devoted to Public Health Service activities in the international health field have increased about five-fold since fiscal year 1958. In that year, funds available for such activities amounted to $3,550,000. In fiscal years 1959 and 1960, funds were increased to $5,307,000 and $8,159,000 respectively. For the current fiscal year, $16,707,000 will be available. It should be noted, however, that a portion of this amount, $3,707,000, may be expended over a period of 5 years.

"For the current fiscal year, the Office of Vocational Rehabilitation has $1 million available for its activities in the international field.

"I firmly believe that the use of these funds will constitute a major contribution to human progress throughout the world, not only to health but to peaceful relations.

"Health is an indispensable link to worldwide understanding and good will. All nations want better health for their people. Cooperation among nations . . . is the surest road toward better health for all.

"Like disease itself, scientific knowledge knows no geographic boundaries. All nations of the world can contribute, all can benefit. Mutual exchange, mutual aid, mutual cooperation—this is the key."

The Challenge to Food Scientists and Food Legislators

By A. J. AMOS, B.Sc., Ph.D., F.R.I.C.

In This Brief Statement Dr. Amos, Chairman of the Pure Food Centenary Executive Committee, Points Out What the Conference Achieved.

THE first *general* pure food law in the English-speaking world, passed by the British Parliament in 1860, was not a success as a legislative measure; but it initiated the march toward purer and better food. The centenary of this pioneering step was commemorated by a conference held in London in September at which food scientists and food legislators from many countries reviewed the progress of the last hundred years and discussed the problems that confront them today.

Problems of Food Quality

The major problem a century ago was the eradication of gross adulteration and of contamination arising from ignorance. Progressive legislation, progress in food science and food technology, and the vigilance of public analysts have jointly solved that problem. Today the use of additives is the main concern of those called upon to safeguard the purity of food. The use of processing aids, protectants, pesticides and the like—a practice made necessary by urbanisation, international trade and the widening gap between population and food production—presents the legislator with the task of screening each proposed additive and deciding whether any objection can be raised against its presence in food. Each addition to the permitted list brings to the food chemist the problem of devising an analytical technique that will enable the amount of a new additive in a food to be determined.

A Consulting Chemist, the Author Is a Partner, D. W. Kent-Jones & A. J. Amos. Dr. Amos Is Coauthor of *Modern Cereal Chemistry;* and Honorary Treasurer and Past Vice-President, Society for Analytical Chemistry.

The lists of permitted food additives adopted by different countries are not the same. This lack of agreement is an obstacle to international trade and thereby impedes distribution of the world's food supplies. If this situation is to be remedied, food scientists and food law administrators must look beyond their national trends and problems and must strive at an international level to bring about unification of the food laws of different countries.

Problem of Food Quantity

The screening and legislative control of food additives and the unification of the food laws of different countries are our present-day problems of food quality but, unlike our predecessors of 1860, we are faced also with the problem of food quantity. Unless steps are taken to increase food production and to reduce spoilage, the food supplies of the world will become insufficient to feed the peoples of the world. We must look to science for methods of increasing and conserving food supplies and to legislation for insistence that those methods are practised to the full.

This is the picture of the change in the problems facing the food scientist and the food legislator that emerged during the Pure Food Centenary Conference. It became abundantly clear that the problems of today—so different and so much wider in scope than those that faced the manufacturer, the scientist and the administrator in 1860—call for unified international action; and the exchange of views and information between eminent authorities from different countries during the meetings suggested that this should not be unrealisable.

[The End]

PURE FOOD CENTENARY PROGRAMME

TUESDAY
Morning — 11:00 a. m. Official opening of the Pure Food Centenary Exhibition at Charing Cross Underground Station by the Minister of Agriculture, Fisheries and Food, *the Rt. Hon. Christopher Soames,* C.B.E., M.P.

Evening — 6:00 p. m. Reception by H. M. Government at Lancaster House, Cleveland Place, S. W. 1., at which *the Rt. Hon. The Earl Waldegrave,* T.D., Parliamentary Secretary (Lords), Ministry of Agriculture, Fisheries and Food, was host.

WEDNESDAY
Morning — 9:30 a. m. Formal opening of the conference by *the Rt. Hon. The Earl Waldegrave,* T.D., Parliamentary Secretary (Lords), Ministry of Agriculture, Fisheries and Food, at the Royal Institution of Great Britain.

Chairman: *The Honourable Mr. Justice Lloyd-Jacob.*

"The 1860 Act and Its Influence on the Purity of the World's Food: Historical Introduction"—*J. H. Hamence,* M.Sc., Ph.D., F.R.I.C.

"Pure Food for the People: The Manufacturers' Contribution"—*E. B. Hughes,* D.Sc., F.R.I.C.

Evening — 6:00 p. m. Reception by the Directors of Unilever Limited at Unilever House.

THURSDAY
Morning — 10:00 a. m. Paper Reading Meeting.

Chairman: *Dr. A. J. Amos,* B.Sc., F.R.I.C.

"Pure Food and the Commonwealth"—*J. G. Malloch,* M.B.E., M.Sc., Ph.D.

"International Aspects of Pure Food and Pure Food Legislation"—*N. C. Wright,* C.B., M.A., D.Sc., Ph.D., F.R.I.C., F.R.S.E.

Afternoon — Arrangements were made for visits to:

Arthur Guinness Son & Co., Park Royal Brewery, N. W. 10.

J. Lyons & Co. Ltd., Cadby Hall, London, W. 14.

The Nestle Co. Ltd., Factory, Hayes, Middlesex.

Central Public Health Laboratory, Bacteriological Laboratories, Colindale, N. W. 9.

T. Wall & Sons Ltd., Laboratories and Ice-Cream Factory, Acton, W. 3.

The Wellcome Research Laboratories, Biological Laboratories, Beckenham, Kent.

United Dairies Ltd., Central Laboratories, Wood Lane, W. 12., and Mechanized Dairy, Vauxhall, S. W. 3.

FRIDAY
Morning — 10:00 a. m. Paper Reading Meeting.

Chairman: *Sir Harry Jephcott,* D.Sc., F.R.I.C., F.P.S.

"National Problems"

Canada—*C. A. Morrell,* M.A., Ph.D., F.R.S.C.

Australia—*F. H. Reuter,* D.Phil., F.R.I.C., F.R.A.C.I.

United States of America—*G. P. Larrick,* D.Sc. (read by *J. L. Harvey*).

"The Integration of Food Research"—*A. C. Frazer,* M.D., D.Sc., F.R.C.P.

Evening — 7:15 p. m. Centenary Banquet, Guildhall, City of London.

By ERNEST GODBOLD, M.I.P.A.

Food Law Administrators and Scientists Celebrate the Pure

THE INTERNATIONAL CONFERENCE, held in London from September 20 to 23 to celebrate the passing by the British Parliament in 1860 of the first general law to prevent the adulteration of articles of food or drink, had a purpose far beyond that of commemorating the beginning of our pure food laws.

The organising committee of the conference, under the chairmanship of Dr. A. J. Amos, consisted of representatives of the sponsoring professional societies and the government departments responsible for the British food and drug administration and health laws. As will be seen from the programme of celebrations (printed on the preceding page), they arranged an interesting and varied programme. They provided a meeting place at which food scientists and administrators could review the progress which had been made in establishing and developing pure food laws throughout the world; and they enabled the delegates to discuss some of the problems raised by the great advances in food science and technology.

To this end a small exhibition was held at Charing Cross Station, one of the main interchange stations of the London Underground Railway System. The *Times* and many other national daily papers published special supplements to mark the centenary. The London evening papers had special features, and the leading food stores arranged displays of posters. The press, radio and television all helped focus public attention on the work carried out by food scientists on their behalf.

The conference opened with a reception by H. M. Government at Lancaster House near St. James's Palace; and the programme

Food Centenary in London, England

Mr. Godbold, Who Has Contributed This Report of the Conference, Was the Member of the Organising Committee Responsible for Public Relations. Mr. Godbold Was Deputy-Director of the Food Standards and Labelling Division of the Ministry of Food in the War. A Nonpractising Member of the English Bar, He Is Now the Managing Director of an Advertising Agency Serving the Food Industry.

included a reception by the directors of Unilever Ltd. at Unilever House, visits to food laboratories in the London area and, finally, the Centenary Banquet in the historic City of London Guildhall.

Reception by H. M. Government

The Right Hon. The Earl Waldegrave, T. D., the Parliamentary Secretary in the House of Lords to the Minister of Agriculture, Fisheries and Food, welcomed the guests to the reception by H. M. Government. Lancaster House provided a magnificent setting for such an occasion. Typical of the great aristocratic London houses of the early nineteenth century, its interior is a brilliant re-creation of the decorative art of France in the reign of Louis XV. Indeed, its splendours were said, by Disraeli, to be "not unworthy of Vicenza," a thought which must have been echoed by many of the guests as they mounted the double staircase with its gilded balustrade and white marble columns to the first floor. Here in one of the state rooms gathered delegates from 22 countries, including representatives from every independent member country in the British Commonwealth, and it was this international aspect of the conference which was emphasised so much in the following days.

Wide Scope of Conference

The paper-reading sessions were held in the Lecture Room at the Royal Institution of Great Britain, where so many of the great scientists of the past have delivered lectures of historical interest, the focal point of the conference. Here—when he officially opened the conference on Wednesday morning, September 21—Lord Waldegrave emphasised its all-important international aspect. Pointing out that the problems of food law administrators and scientists could not be considered effectively by each nation in isolation and that international cooperation was essential, he expressed the hope that one day it might be possible to achieve international standards for pure food.

The session commenced with an historical survey of the development of food and drug laws in the past 100 years and the influence which the 1860 Act has had in securing high standards of food purity throughout the world. The other paper in the first day showed how, from the work of the early public analysts appointed under the 1860 Act, the food industry itself has developed scientific control of the purity, quality and uniformity of processed food. It reviewed the contribution which the manufacturer makes to food research.

The second day of the conference was devoted to two papers on international aspects of pure food legislation, covering the many problems raised by increasing international trade and the longer "hauls" between the sources of food production and the urbanised industrialised communities.

Both of these papers and the three papers which were presented on the third day and which dealt with the national problems of Australia, Canada and the United States of America emphasised the great problem which differing standards, particularly as to the use of additives, present to scientists and administrators alike.

Lastly, and very appropriately, came a paper reviewing the three main fields of scientific food research—the production of the raw materials, their processing, and their effect on the health and nutrition of the consumer—in particular the need for integrated research.

On the following pages will be found summaries of the papers and a brief note of the discussions. These are necessarily brief, but the full text of the papers and discussions will shortly be published by Butterworths Inc.

Exhibition for the Public

On Wednesday afternoon, delegates visited the Pure Food Centenary Exhibition at Charing Cross. This had been officially opened the previous day by the Minister of Agriculture, Fisheries and Food, the Right Hon. Christopher Soames, C. B. E., in the presence of the mayor of Westminster and the chairman of the London Transport Commission, when he paid tribute to the work of the food scientists in both public and private employ "to ensure that the varied and attractive food which the manufacturers provide is both wholesome and pure."

This exhibition, which consisted of a food laboratory of 1860 contrasted with one of 1960, was the first occasion on which an attempt had been made to place a working chemical laboratory before the general public. Here it was possible to compare the primitive apparatus of the early chemist with modern techniques and equipment. A dimly gas-lit room, with the only heat provided by the traditional large muffle furnace, contained such simple equipment as

A Comparison of Old and New

A Corner of the 1860 Laboratory at the Charing Cross Exhibition

a long tube microscope and the slow-working long beam balance. In the modern laboratory, brightly lit with fluorescent lighting, members of the public were able to see the modern counterparts. They were able to look down a polarimeter tube in order to see how sugar solution deflects the path of polarised light. There were plates to let the public see how chemists can detect the presence of antibiotics in canned meats or determine the quantity of vitamins in foods. They could see how a refractometer can help to identify an oil and how, with chromatographic sheets, colours from foods could be separated and identified. Other interesting pieces of apparatus from the public standpoint were the Hortvet apparatus showing the addition of water to milk, the Flame Photometer for the determination of traces of essential mineral constituents, and the Karl-Fischer apparatus for the determination of traces of water in oils.

The great interest which this exhibition created was largely due to the conscientious work of a subcommittee under the able chairmanship of Mr. T. McLachlan, who not only provided much of the

1860 equipment from his private collection but also produced with erudite diligence a comprehensive collection of historic documents which were on display at the Royal Institution.

Get-Together at Unilever House

On Wednesday evening Mr. George Cole, chairman of Unilever Ltd., and Mrs. Cole welcomed delegates and their wives to an informal reception at Unilever House. Now delegates were really beginning to get together. There were many happy introductions and reunions, and valuable personal contacts were made.

Centenary Banquet

Finally came the highlight of the week's celebrations, the Centenary Banquet in the City of London Guildhall. It was a fitting end to an historic occasion as the guests assembled, a company of 450, in the brilliantly lighted Great Hall, its mediaeval walls hung with the Guild banners of the City Livery Companies. While dinner was served,

A Corner of the 1960 Laboratory at the Charing Cross Exhibition

music was played by the orchestra of the Grenadier Guards, sitting in the gallery between the giant figures of Gog and Magog.

Then came the speeches—witty and gracious. After the loyal toasts the president of the Royal Institute of Chemistry, Mr. E. Le Q. Herbert, proposed the health of the Lord Mayor and the Corporation of London and the Sheriffs, to which the Rt. Hon. The Lord Mayor Sir Edmund Stockdale duly replied. With tremendous gusto—worthy of a son-in-law of Sir Winston Churchill—the Minister of Agriculture, Fisheries and Food, the Rt. Hon. Christopher Soames, proposed the Pure Food Centenary toast, an inspiring appreciation of the importance of the work of the food chemist. Dr. A. J. Amos responded in more serious vein, befitting the occasion.

Lastly, with true felicity Mr. J. P. Van den Bergh proposed the toast of the guests, embracing everyone with his delightful bonhomie —including the ladies clutching their Wedgwood China gifts—and

Dr. A. J. Amos and Mrs. Amos Receiving the Minister of Agriculture, Fisheries and Food, the Rt. Hon. Christopher Soames, and Mrs. Soames at the Centenary Banquet in the City of London Guildhall.

paying particular tribute to those who had contributed papers to the conference. Then, with his great reputation internationally, there could have been no one more fitting to respond than the Deputy Director-General, Food and Agriculture Organisation of the United Nations, Dr. Norman Wright. This it was his pleasure to do. A model of urbanity, he left everyone with the warmest feelings of gratification for the banquet and for the whole conference.

Daily Report of Centenary Proceedings

THE CHAIRMAN of the first meeting—Wednesday, September 21—was the Hon. Mr. Justice Lloyd-Jacob, a Judge of the Chancery Division of the High Court of Justice to whom patent law cases are specially assigned. So that an opportunity might be given to consider the role of packaging in ensuring pure food and protecting the public from any forms of adulteration, he invited contributed statements from delegates representing two types of packaging.

This was followed by a general discussion of the two papers, in the course of which a plea was made that in the control records of many manufacturing organisations there was a great amount of material worthwhile publishing which would be of value not only to other technologists but also in fundamental research. Other subjects covered in the discussion were factory hygiene and pest control. A point was also made that it was wrong to introduce aids in the manufacture of food which might be allowed to undermine good manufacturing practice in the food industry, and also that very careful vigilance was necessary to see that substances such as plasticizers and things of that sort used in packaging must be kept under very adequate control by legislation if they in any way affected the food.

One of the most important points brought up by the discussion was that responsibility for pure food does not end with the manufacturer, as in the case of frozen foods, where there must be a safe cold chain to the public. Education was very necessary to ensure that distributors, retailers and the public themselves understood how food should be handled to keep it pure.

It was a representative of the United States, Dr. B. L. Oser, who asked that in paying tribute to the various ancillary industries for the part they have played in developing higher standards, the

valuable contributions of the chemical industry should not be overlooked.

Second Meeting

The chairman of the second meeting was Dr. A. J. Amos, B. S., F. R. I. C., the chairman of the organising committee of the conference, to whom a fitting compliment was paid for the time, effort and ability which he had given so unstintingly to the celebrations. Introducing the speakers, he appealed for the greatest collaboration among countries to arrive at the practical unification of food laws on an international basis and referred to the problem of feeding the peoples of the world, a problem which was becoming progressively more acute. The discussion opened with a commentary outlining the work of the *Comite Internationale Permanent de la Conserve*, the international association of canned food manufacturers and the technologists and their advisors. Though they had tried hard to set up international quality standards, in 25 years they had been able to agree on only four standards, one of which dealt with the size of cans. However, there had been a very considerable exchange of technical information.

Then the chairman referred to the fact that the conference had really sprung from a suggestion made in 1957 (when the American Bar Association met in London) by the late Charles Wesley Dunn, who was known and admired by many of those present and who had taken a great interest in the project up to the time of his death. His successor as president of The Food Law Institute, Inc. (United States, America), Franklin M. Depew, was then invited to contribute to the discussion on international problems. Referring to Dr. Malloch's comments that trade in food must be made as free as possible, Mr. Depew said that in the long run it must be recognised that the consumer pays the extra cost of conforming to different requirements in different countries. The activities of the Food and Agriculture Organisation of the U. N. as a clearing house for information about food laws were an important and essential feature of its work, he said, and every effort should be exerted to see that these activities were not hampered by lack of funds.

Mr. Depew then referred to the firm opinion held by his predecessor, Mr. Dunn, that the effective enforcement of food laws could best be achieved through education and cooperation, and he strongly advocated that that method of enforcement should be continued. He

felt that this concept had been the idea which had guided the legislatures and enforcement agencies in most countries, particularly in the English-speaking group. The enforcement agencies had worked with industry with a realistic regard for the principle that such laws would be difficult, if not impossible, of enforcement if they did not enjoy the support of those required to observe them.

During the course of the following discussion, reference was made to the problems of the economic disposal of local surpluses, particularly since farmers would not answer appeals to produce more crops if one of the results was that they obtained less for their products. Three points were made on behalf of the undeveloped countries: (1) Some kind of "Interpol" was necessary to prevent cargoes of substandard food expelled by one country from being shipped to another; (2) they needed help in both personnel and advice in promoting their pure food legislation; and (3) there was a tendency for exporters from European countries to encourage the misdescription of foods in undeveloped countries, and it was not just local ignorance which led misdescription to be continued.

Another subject referred to was the difficulty of obtaining international agreement on food standards in the absence of internationally agreed methods of test. The International Standardisation Organisation had a committee on agriculture and food products which had set up five subcommittees to deal with propagation materials, cereals and pulse, meat and meat products, milk and dairy products, oil and oil seeds, and condiments and spices. The number of countries which were contributing to this work was quite considerable, but the work was still in its infancy.

One of the problems was that the main international committee had a secretariat from behind the Iron Curtain, and a great deal of the interest taken in this work came from the other side of the Iron Curtain.

Finally, the meeting was told of the way in which the Food and Agriculture Organisation was in a position to advise individual countries on specific matters in regard to their legislation and their methods of control for pure food and to help them by sending experts to individual countries, by running training courses if there was a demand, and by providing fellowships under the technical assistance schemes to enable promising students from undeveloped countries to visit the more-developed countries for training.

Third Meeting

The chair of the third meeting was taken by Sir Harry Jephcott, D. Sc, chairman of the Research Council of the Department of Scientific and Industrial Research, and chairman of Glaxo Laboratories Ltd., who, when serving in the Ministry of Food during the war, initiated the broader basis on which the food and drug laws have been administered in Great Britain. In his opening remarks, he referred to the help and assistance which he had received at that time, when visiting the Food and Drug Administration in Washington and the Food and Drug Directorate in Ottawa. It was, therefore, as old friends that he welcomed Dr. C. A. Morrell and Mr. John L. Harvey, who read the paper prepared by Dr. G. P. Larrick. In the discussion which followed the papers on national problems, reference was made to the difficulties of public analysts in efficiently discovering excessive use of insecticides and pesticides as well as the difficulty of tracing the grower of the crop which is found to be unfit for consumption. A long discussion took place regarding the onus of the manufacturer of an agricultural pesticide not only to disclose everything that is known about its physiological, pharmacological and toxocological properties, but also to prove that it confers some advantage from a technological point of view. It was felt that there was a case for reducing the large number of insecticides and pesticides to those which were most effective for the particular pest for which they were designed.

Dr. B. L. Oser referred to some of the difficulties of adding tracers to facilitate the detection of pesticides, and suggested that the solution of the problem would probably come from the use of rapid instrumental methods which could be used by inspectors out in the field rather than in the laboratory.

So far as chemical additives were concerned, the scientist tended less to think of the acute effects of chemicals which were so common 100 years ago when foods were adulterated, but more to think of the chronic effects of chemicals because of the methods which had been found of exploring and investigating them.

Time did not permit a discussion of Professor A. C. Frazer's paper, and the meeting finished with the chairman again thanking the speakers of the various countries and congratulating Dr. Amos and the organising committee on the great success of the meetings.

[The End]

The 1860 Act and Its Influence on the Purity of the World's Food: Historical Introduction

By J. H. HAMENCE, M.Sc., Ph.D., F.R.I.C.

This Is the Summary of the Paper Presented by Mr. Hamence at the Pure Food Centenary Conference in London on September 21. He Is President-Elect of the Association of Public Analysts and Past President of the Society for Analytical Chemistry.

THREE HUNDRED YEARS AGO, when the Englishman's life was mainly pastoral, the majority of people lived on home-grown foodstuffs, spices being the only foodstuffs imported to any appreciable extent.

With the Industrial Revolution, a new state of affairs developed and the Englishman gradually became a town dweller and relied almost entirely on food produced and sold by others. Apart from a few statutes relating to beer, bread, coffee and spirits, etc., there was no general administrative control over the purity of food. It is not surprising, therefore, that with the increasing demand for food at a low cost in the industrial areas, adulteration of food began to flourish and extend.

Clearly, adulteration was a profitable business into which anyone might venture without the slightest risk of detection. The early history of the adulteration of food is somewhat obscure; bread apparently being the commodity most seriously adulterated, and painful and humiliating penalties were often inflicted on vendors suspected of fraud. Beer and wine similarly came in for their share of adulteration. The beginning of the nineteenth century saw the birth of modern chemistry which brought to light many new materials possessing

properties similar in some respects to natural foodstuffs, and clearly these were ideal for purposes of adulteration.

First Systematic Effort to Investigate Adulteration—Work of Dr. Hassall

Little serious public attention seems to have been drawn towards adulteration until about the middle of the eighteenth century. About this time several monographs drawing attention to the serious adulteration of food were published, and once again these were mainly directed against bread. These publications attracted little attention, but the campaign was resumed again in 1820 by Accum, who published his famous book *A Thesis on the Adulteration of Food and Culinary Poisons,* frequently rather erroneously referred to as "Death in the Pot." The first really systematic effort to investigate the grim stories of adulteration was made by Mr. Wakeley, the then editor of *The Lancet.* For this purpose he set up The Lancet Analytical Sanitary Committee under the direction of Dr. Hassall. Dr. Hassall may truly be said to be the first man to investigate food adulteration from a scientific point of view.

Enactment of Food and Drink Act in 1860

The results of Dr. Hassall's findings were published in *The Lancet.* The heavy proportion of adulteration reported by Hassall attracted much public attention. It is quite clear now, however, that a substantial proportion of this adulteration was the result of ignorance. In 1855, following these reports, a Parliamentary committee was appointed to investigate food adulteration. This committee reported that it could not avoid the conclusion that the adulteration of food was widespread. Its report led to the passing of the first Food and Drink Act in 1860. The principal provisions of this act were briefly: It became an offence to sell any food or drink which was adulterated or not pure, and it provided for the appointment of analysts (subsequently known as public analysts) to examine the purity of articles of food and drink.

Here at last was a means by which a check could be kept on articles of food and drink sold to the public and, furthermore, a means by which accusations of fraud and adulteration could be fully investigated by an unbiased authority.

Unfortunately the act was a failure, and this was partly due to the lack of suitably qualified men to be appointed as public analysts and also to an almost complete lack of knowledge of the chemical composition of everyday foodstuffs, which rendered the meaning of adulteration to say the least, difficult. The world was, however, fortunate that among the first appointed public analysts were a handful of vigorous and enthusiastic chemists who began a systematic study of the composition of foods in the course of which they laid the foundation for modern methods of analysis. In the years to come the laboratories of these pioneers were to become the training grounds of analytical chemists. As a result of this Herculean effort by the pioneers and of subsequent acts, in which the earlier legal difficulties were removed, by the early twentieth century the grosser forms of food adulteration had disappeared and the lesser ones were kept under control. During this highly developmental period, manufacturers also took advantage of the advances in food chemistry and slowly, by degrees, introduced scientific control into their manufacturing operation.

Spreading Knowledge of Food Chemistry and Food Analysis

In all this work Britain had given a lead to the rest of the world. In the following years other English-speaking nations were to follow suit with similar enactments taking full advantage of the errors and shortcomings of our early efforts. During these years, too, other nations were also to make their contributions to our knowledge of food chemistry. A valuable outcome of the early difficulties of public analysts was the formation of the Society of Public Analysts, which, together with its journal, *The Analyst,* was to spread the knowledge of food chemistry and food analysis all over the world.

Today, apart from the main Food and Drugs Act of 1955, we have a number of regulations made under the act which are all designed to cover some new development of pure food and to safeguard the purity and nutritive value of foodstuffs. These developments have naturally considerably complicated the work of the public analyst and the food chemist. In spite of modern developments, however, the price of pure food is still eternal vigilance, particularly in times of food shortage. It has rightly been claimed that the Englishman enjoys some of the purest food in the world, and this he owes, without any shadow of doubt, to the Act of 1860. **[The End]**

Pure Food for the People: The Manufacturers' Contribution

By E. B. HUGHES, D.Sc., F.R.I.C.

Mr. Hughes, Who Is Chief Chemist, J. Lyons & Co. Ltd., Is Past President, Society for Analytical Chemistry, and Past Chairman, Food Group of the Society of Chemical Industry.

THE ADULTERATION ACT OF 1860, the precursor of food and drugs acts in England, and indeed the first ever instituted in any country, was introduced at a time of great awakening of public conscience and understanding and consequent extensive social reform. Whatever may have been the degree of truth in the allegations of widespread food adulteration at that time—and without any controlling law and with little understanding of the matter, there must have been foundation for them—nevertheless there then existed many food manufacturing firms which are household names of high repute today as they surely were then.

After the introduction of this first food legislation, food manufacturers began to appreciate the necessity for scientific enquiry and control in their own industries, and soon their scientists contributed much of the knowledge of data on composition of foods and methods of analysis that are necessary for the judgment of the purity of food.

First of all, what do we mean by "pure food"? The requirements for pure food are found in Sections 1 and 2 of the Food and Drugs Act and these may be paraphrased to mean that food that is pure is food that is what it is represented to be; it must be wholesome and free from anything that might in any way be harmful or that might impair its goodness. This is the manufacturer's objective with the important further factor that, not only must the food be pure, but it must be presented in a form pleasing and attractive to the consumer —it must appeal to the eye as well as to the palate, and it must reach the consumer in that condition.

These requisites of appearance and texture can be attained by manufacturing skill combined, where necessary, with the use of small quantities of harmless additives such as colours, emulsifiers and stabilisers, and preservatives. Such substances are subject to regulations, as regards the nature of the addition and the amount that may be used and the products in which they may be used. These approved additives have been carefully scrutinised from the health hazard point of view by experts; a doubt on any proposed material is a condemnation; and a slight suspicion refers it back for further evidence and consideration. No manufacturer could disagree with this principle, nor with the requirement that, for any new additive proposed, there should be submitted evidence of compliance with approved biological tests, for this gives confidence to himself and confidence to his customers in his products. The basis on which these regulations have been framed is shown in the following abstract from one of the Official Reports of the Food Standards Committee of the Ministry of Agriculture, Fisheries and Food (Report on Emulsifying and Stabilising Agents 1956-1957):

"Our general view is that it is not in the public interest for chemical substances to be added to food unless there is adequate evidence that their use in food will not affect adversely the health of the consumer and a strong case can be made out that their use in food will have advantages economically, technically, or otherwise, likely to benefit the consumer."

Thus the consumer is fully guarded.

Nowadays a scientific laboratory is a necessary adjunct to a food factory. The science of food is widespread in application in the industry and is of such importance that food scientists have their own associations to provide means for interchange of views and publication of their work. In this country, the Food Group of the Society of Chemical Industry's *Journal of the Science of Food and Agriculture* is available not only to members but to any subscriber, notably the libraries.

The work of the scientist in the Food Industry can be described under three headings: control, development and fundamental research.

Scientific Control

To ensure the purity, quality and uniformity of the products manufactured, examination and analysis of ingredients, checking of

observance of recipes to ensure that the specified conditions are being followed, and inspection of the operations of manufacture and the product itself at all stages to the finished and packed article. The control necessary varies according to the nature of the food manufactured: perishable foods require, in general, much more detailed inspection and involve, particularly, such matters as bacteriological tests of absolute cleanliness of plant and utensils, the time and temperature of cooking and the like. Even the container or packet must be considered and tested to ensure that it will not cause any trace of odour or contamination and that it will keep the product properly until it reaches the consumer. This control work is maintenance work: It ensures safe products of unvarying quality from day to day. Add to this control the careful understanding supervision of good managers and well-trained foremen and staff, and their cooperation with the scientists, and we have a very high measure of care.

Development

To improve a product or make a new one, to improve any of the stages of manufacture or to discover an entirely new process; these require applied research. Without such research there can be but little progress.

Fundamental Research

This covers what are known as long-term investigations. They delve into detail of composition of food materials with the object of gleaning more and more information of the constituents present and their properties. The more such information we have, the more intelligently we can undertake applied research: in short, the more we know about our materials, the better we can use them.

Basic research on food is also, in considerable measure, of academic interest. It provides new knowledge which may, or may not, ultimately lead to application but, as food is mostly traditional in character and composition, this research can never be expected to lead to such spectacular advances as are possible from research in engineering, aviation, nuclear physics, etc.

No one food chemist could provide the service for even a small factory. Modern scientific work is so specialised, apparatus so delicate and exact, that specialists such as analysts, physical chemists,

biochemists, bacteriologists, chemical engineers and others are all required to make up an organisation capable of meeting the needs of a factory making a variety of products. Nevertheless, for the small manufacturer research on his problems is available to him through the research associations to which manufacturers subscribe according to the size of their business. Thus, the smaller manufacturers have the advantage of facilities to which the larger manufacturers contribute more. The research associations are also benefited by subsidies—depending on the support given by the trade—granted by the Department of Scientific Research (DSIR). The four such associations representing respectively British Food Manufacturers, British Baking Industries, British Flour Millers, and Fruit and Vegetable Canning and Quick Freezing Research spend jointly about £250,000 per annum, though in addition some large firms must spend individually about as much as this total in their own research establishments. The total annual expenditure on food research in Great Britain probably amounts to about £3,000,000. What is the value of this work? It is steadily giving improved and more economical production, more uniform products with avoidance of faults and waste and, through the resultant care for and satisfaction to the consumer, growth in trade and benefit to the purchaser. **[The End]**

Pure Food and the British Commonwealth

By J. G. MALLOCH, M.B.E., M.Sc., Ph.D.

The Author of This Paper, Presented on September 22, Is Scientific Adviser to the High Commissioner for Canada.

THE COMMONWEALTH led the world in pure food legislation when in 1860 the United Kingdom passed its first pure food act. This was one of the early laws which had a technical basis. When

one remembers that modern professional science really only came into existence with the granting of the first science degrees by the University of London in the same year, it seems a remarkable achievement. The British example was soon followed by New Zealand in 1868 and subsequently by all the larger overseas territories. The process of amendment and new legislation has gone on ever since. Only two years ago the Federation of Rhodesia and Nyasaland passed a new act.

As new countries become independent or attain domestic self-government within the Commonwealth, they will no doubt feel the necessity of pure food legislation. This, like the food situation in general, will present technical problems which cannot be entirely solved by copying what has been done elsewhere. Conditions and customs are so diverse that each country must tackle such questions for itself. Unfortunately, not all of the new countries have the scientific and technical resources to deal with all their problems. They need and want help—help to stand on their own feet and not through having things done for them. Their greatest need is for the friendly cooperation of their colleagues in the older countries. Food technologists have a special opportunity, because the problems with which they deal are of such basic importance to the human and economic welfare of these new countries.

Differences in Standards Hamper World Trade

Foodstuffs are the largest single element in the economic life of the Commonwealth as a whole. The intra-Commonwealth trade in food reaches an annual value of about £700 million, while exports to the United States and western Europe are about £200 million and £100 million, respectively. It is of great moment that commerce of this magnitude should move freely and should not be hampered by unnecessary restrictions. Most of the countries concerned as exporters or importers have pure food regulations which affect a wide variety of the foodstuffs entering into international trade.

Differences in standards can and do lead to difficulties. For the most part these are due to honest differences of opinion. Often the present state of technical knowledge is not sufficiently precise to give a definite guide. One country may permit a colouring matter which is considered injurious or unnecessary by another, with equal technical justification. Such differences can only be removed by close and frequent consultation between those responsible in different countries.

The greatest possible Commonwealth and international agreement on standards of purity and safety is needed, as well as research which will substitute facts for opinions as their basis.

Problem of Feeding Increasing Populations

Important as these matters are, they are overshadowed by the problems of ensuring that all the people of the Commonwealth get enough good food. The present situation is not satisfactory. The United Kingdom can only feed about 30 million people from its own resources. India is afflicted with periodical local famines. Millions of men, women and children in Asia and Africa live a precarious existence close to malnutrition or even outright starvation. Some countries have surpluses of certain commodities, but with their increasing populations they will become net importers in a comparatively few years, certainly less than a century, if present production levels are maintained. At the same time there are population increases, often spectacular, in the deficiency countries. Population control offers only a long-term and partial solution, so that increased food supplies are the only real answer. They can be made available, but only through urgent, consistent and effective action along social, political, economic and technical lines.

Land-use policies must not allow the avoidable diversion of good farm land to other uses and must achieve an intelligent balance between agriculture, forestry, industry and urban development. Like waste of land, waste of fertility must be prevented. We cannot afford to continue to allow towns to pour plant food into the sea or to use manure as a source of heat. The productivity of existing farms must be increased and new land must be brought under cultivation. Changes in social custom and the wider application of existing knowledge will play a part, but research and technical development will be the dominant factors. Any large extension of production will require new varieties, suitable culture, the building-up of fertility and better control of the diseases and pests of plants and animals. However, by far the most important factor limiting production in the Commonwealth is lack of water. Drought reduces yields and makes immense areas of potentially fertile land unfit for cultivation. The gap between the quantity of food now produced and that actually eaten must be reduced. The amount of food which spoils before it can be eaten, particularly in tropical climates, is sufficient to nourish very large

numbers of people. Research must devise new methods by which food can be preserved safe and pure.

The problems of Commonwealth food supply can be solved if wise action is taken vigorously enough and quickly enough. Research is absolutely essential to provide the technical basis for economic and political action. Science in all fields must play its part. The problems cannot be solved solely by food technologists or those concerned with its purity, or even by agriculturalists acting by themselves. The work required embraces most of the sciences: biology, physics, chemistry and engineering. Research of an extent and diversity adequate to cope with the tremendous and difficult problems is vital. Today there is a tendency for the "glamour" subjects to receive major attention. No one would deny their importance. Indeed, work in nuclear physics and engineering may be of the greatest assistance in solving some of the problems of food supply. What is badly needed is greatly increased support for fundamental science and for research in those applied fields of great potential benefit to mankind. Not the least of these is research on all the varied aspects of increasing food supply. **[The End]**

International Aspects of Pure Food and Pure Food Legislation

By N. C. WRIGHT, C.B., M.A., D.Sc., Ph.D., F.R.I.C., F.R.S.E.

The Author Is Deputy Director-General, Food and Agriculture Organisation of the United Nations, and Past Chief Scientific Adviser (Food), Ministry of Agriculture, Fisheries and Food.

WHETHER from a national or international aspect, the basic aims of pure food legislation are identical: the prevention of health hazards to the consumer and the prevention of fraud. These are the twin pillars of present-day food protection in every country, just as

they were for the British Act of 1860 whose centenary we are now celebrating.

Implicit in these two basic aims are two others: furthering trade, both national and international, and safeguarding revenue. From the international point of view, the trade aspect, the need to harmonize national laws has always been in the foreground, whilst more recently the consumer protection aspect has grown vastly in importance due to the new universally recognised need of providing the less-developed countries of the world with the means of bringing their food laws—and, above all, the conditions which these laws presuppose—to the best possible levels.

Quickened international interest in food legislation is due primarily to five factors:

(1) the growth of international integration, the need for larger markets and the growing number of independent states;

(2) the vast expansion of world trade especially in agricultural products, which represented one third of total exports in 1958;

(3) the use of modern means of food preservation (refrigeration, preservatives, etc.) which have made that trade possible;

(4) the use of other chemical additives such as colours and flavourings and the hazards due to new manufacturing and packaging methods; and

(5) the risky use of pesticides, essential to food production but capable of leaving harmful residues.

Efforts to Solve Problems

What has international interest revealed and how can the problems so defined best be tackled? First, the widest complexity and extent of the problem. For instance, in the United States of America, regulations issued under the recent food-additives amendment—a small part of food legislation as a whole—cover 25 times the space taken up by the text of the first British Act of 1860. Second, the wide diversity of approach. For example, a recent study of food colour legislation showed that of 82 food colours permitted in 22 countries, only one colour was permitted in all of them!

As to the method of tackling these problems, the first task is to keep track of what each country is doing and to keep other countries informed. For example, together with the World Health Organiza-

tion, the Food and Agriculture Organisation (FAO) publishes at roughly monthly intervals a bulletin, *Current Food Additives Legislation*, which in its first four years has abstracted some 300 food law amendments in this field from about 50 different administrations. A series of national studies on food-additive control systems has also been started. Those on Canada and the United Kingdom are already available, others are to follow.

These are only beginnings. What should the ultimate aim be? In my opinion, clearly not supranational legislation; for conditions, climate and food patterns are and will remain too widely different. A regional approach, on the other hand, has been widely used with some success. Already *Europeus Alimentarius* was started by the International Congress of Chemistry and was revived at Vienna five years ago with the aim of producing "a compendium of definitions and standards recognised as binding by common consent of governments and industries concerned." This approach, it is claimed, overcomes the requirement of formal enactment by the complicated legislative process—an important aim in work of this sort.

A very similar project has been carried out in South America, where a comprehensive *Codex Alimentarius Sudamericanus* was drawn up in 1959 containing 800 articles. It is not possible to forecast to what extent its provisions will be adopted by the countries concerned.

Apart from these two ambitious projects, the Economic Commission for Europe has elaborated standards for a number of fruits and vegetables, whilst considerable progress has been made by the Common Market, which I understand will shortly issue unified regulations on food colours, binding upon the Six.

However, the regional approach is limited in the results it can achieve in furthering world trade and I would like to give two examples of what the Food and Agriculture Organisation is doing on a world-wide, rather than a regional, basis.

Achievements on World-Wide Basis

In 1957 work was begun on designations, definitions and standards for milk and milk products. Starting from a carefully prepared draft submitted by the International Dairy Federation, the governing body of FAO set up a committee of government experts charged with presenting recommendations in the field in such a way as would allow

governments to adopt them "without having recourse to Treaty procedure." The committee has held three meetings, and a "Code of Principles Concerning Milk and Milk Products" has been published, together with a number of individual standards and details of government acceptances. The code has been accepted by some 30 governments, including all the principal interested countries. Whilst enforcement of its rules in the ordinary sense is not possible on the international level, the committee is working out a "follow up" procedure to ensure application of the code in practice. In this way a fresh approach is being made to the problem of finding a simple, but effective and flexible, method of international agreement on food legislation in a technical and changing field to which older methods have proved unsuited.

The second example of work on a world-wide basis is the FAO/WHO joint program on food additives. The method used represents a "flank attack" on perhaps the most technical and complex part of modern food legislation, in an effort to agree on the principles which should govern the use of food additives to protect the consumer.

A general conference and four meetings of independent experts of world-wide reputation have been held, each session attended by specialists in the subject to be discussed: (1) general principles (permitted uses of additives, possible restrictions, declarations, need for purity, etc.), (2) procedures for determining safety for use, (3) specifications for preservatives and (4) specifications for food colours. A further meeting will be held shortly on carcinogenicity. When the five reports—so far all unanimous, which is no mean achievement in international work—are available, they will be submitted to governments. Having myself helped to plan the original strategy, I strongly hope this "flank attack" will follow the best military precedent!

This paper attempts to show the increasing importance of international agreements in the food law field and outlines some of the principal effort made both on a world-wide and on a regional basis. In particular, two methods of achieving the former have been given, which I believe show promise of solid achievement. We live in an international age; it must be our responsibility, as well as our privilege, to further in the field of pure food legislation the mutual understanding between nations, which is one of the outstanding concepts of the twentieth century, and which I firmly believe will be ranked as one of its greatest and most beneficent achievements. **[The End]**

National Problems of Pure Food and Pure Food Legislation—Canada

By C. A. MORRELL, M.A., Ph.D., F.R.S.C.

The Author Is the Director of the Food and Drugs Directorate, Department of National Health and Welfare, Canada.

THE BRITISH FOOD LAW of 1860 was an important document for the Empire, the present Commonwealth and other countries of the world, as well as the United Kingdom. It set a pattern for similar legislation elsewhere.

In 1874 Canada's first food and drug law was passed by the Canadian parliament and it became effective on January 1, 1875. It was the first national food law in the Americas. The first chief of the Canadian food and drug administration was an Englishman, Henry Sugden Evans of Liverpool. Mr. Evans was educated at the Merchant Tailor's School and the College of the Pharmaceutical Society and had been president of the Pharmaceutical Society of Great Britain in 1869 before coming to Canada. The second chief was a Scotsman who was followed by another Englishman, and the last three have been Canadians.

A comparison of the first annual report of the Canadian government on foods in 1877 and the food section of its annual report of 1958, reflects the differences in the foods examined and the development of the Canadian law and its enforcement in the intervening 81 years.

In 1877 only 180 samples of foods were analysed and 52 per cent were found to be adulterated. In 1958, according to the Annual Report of the Department of National Health and Welfare, 29,909 food samples were examined and 6,057, or 20 per cent, were unsatisfactory. Neither figure gives a true picture of the average condition of foods

during the years in question. Samples for examination are always selected on the basis of suspicion and not on a random basis. Foods were most certainly better, on the average, than these figures would indicate.

In 1877 the adulteration could be classified as gross adulteration. There were no legal standards for goods in Canada in those days or many years thereafter. In the early part of the present century, government and groups of scientists proposed standards for many of the basic foods and food technologists began to develop methods specifically designed for the detection of adulteration of foods. Legal standards for a number of foods now exist in many countries, and laboratory methods are available for their enforcement.

A large proportion of the foods found to be unsatisfactory in 1958 were so because of a violation of a legal standard and not many could be classified as grossly adulterated in chemical terms. Violations of sanitary requirements in their production, the improper use of preservatives, nonpermitted colours and other chemical additives were more frequently observed. Deficiencies from the standards in the required amounts of basic ingredients and the substitution of cheaper food ingredients were also noted.

Modern Methods of Food Analysis

Important improvements in the means of analysis have occurred through the introduction of spectroscopy and chromatography. Modern methods of food analysis frequently require the use of expensive instruments but they save much time and make possible, in a practical way, the detection of adulteration of foods that would not have been observed in the last century. The development of standards and methods of analysis is a continuing process, and more work of this kind is being done now than ever before.

Authority over Labels and Advertising

To prevent fraud of health hazards through misleading or false claims, it is necessary in connection with a pure food law that there be some authority over labels and advertising, and there is such authority in the Canadian Food and Drugs Act. Scrutiny of advertising and labels is an important function of the Canadian Food and Drug Directorate. It requires time, patience and good judgment on

the part of those who examine labels and advertising to make sure that the consumer is not misled, while at the same time permitting the manufacturer the latitude to which he is entitled.

Difficult Problems Need Solution on International Basis

The most difficult national problems in the food field facing the Canadian Food and Drug Directorate are such that they cannot be solved on a national basis alone.

The first of these problems arises from the increasing use of chemical substances in the production, processing, packaging and marketing of foods and the potential hazards to health accompanying their use. Canada is a food-importing country as well as an exporter. Foods made in Canada and foods entering Canada from abroad must meet the standards and other requirements of the Food and Drugs Act and regulations. It would be well if the Canadian requirements for the use of food additives were the same as those in countries with which we do business. This is unlikely if an international agreement is not obtained.

A second aspect of the food additive problem relates to the collection of data and other information about the safety of chemical additives and the decisions as to what is a safe amount in each case. Canada has not the facilities for testing all substances that may be added to foods, and here again we must rely on information collected in other countries.

Another problem of considerable importance is the supervision of advertising claims made for foods. The authority of the Food and Drugs Act is, in practice at least, limited to advertising originating in Canada. It is difficult to restrict Canadian advertising when objectionable claims for the same foods are made in periodicals and radio and television commercials originating in other countries that are often read or heard at home. There does not appear to be any likelihood of this situation improving in the near future. This is a difficulty met, not only in Canada but in other countries as well, and to overcome it, agreement between countries must be reached.

We as Canadians are very happy to extend our congratulations to the United Kingdom on the occasion of the centenary of their pure food law. **[The End]**

National Problems of Pure Food and Pure Food Legislation—Australia

By F. H. REUTER, D. Phil., F.R.I.C., F.R.A.C.I.

The Author Is Associate Professor of Food Technology, The University of New South Wales, Sydney, and Chairman, Food Standards Committee of the National Health and Medical Research Council.

"AUSTRALIA was the first of the Dominions of the British Empire and probably the first country in the world to enact pure food legislation and to establish standards to which manufacturers of food must conform. There was a pure food act of the amplest description in force in Australia before the bill for the American act came before Congress. Indeed at an International Conference held in Paris in 1908, a resolution was passed applauding the work of the State of Victoria in this connexion as the most complete and advanced in the world"—thus spoke the London *Times* in 1914.

After this auspicious start, Australia has met problems in the field of pure food legislation which stem from her geographical, historical and political conditions, and for the first 50 years of her existence as a federation they appeared too formidable to permit of a solution. But common sense prevailed and, at the expense of a colossal amount of volunteer labour, the solution has been found and is being implemented to the satisfaction of the two parties concerned—the food processing industries and the public health authorities. In fact, both are now confident that the foundation is laid for pure food legislation on a national scale.

The Constitution Act of 1900 established a division of powers, with the states principally concerned with internal affairs, and the Commonwealth only concerned with such powers as were specifically made over to it. All others—the residual powers—remained where

they were, with the territorial state governments. Thus, foods for consumption in Australia are the responsibility of the states, except in the territories under the control of the Commonwealth. Each state has its own pure food act, and makes its own regulations regarding standards, packaging, labelling and the sanitary handling of foods.

As a matter of course and as each state from time to time made changes to its pure food act and its regulations to meet the needs of industry, the regulations of the various states became increasingly inconsistent with each other. This was of little consequence as long as each state was essentially self-sufficient with foods. But this situation has changed substantially with the 1939-1945 war. As a result of better means of transportation, particularly road transport, the substantial interstate trade and marketing on the national scale have made industry aware of the disabilities, which lack of consistency between state pure food regulations imposes on them, and has made them take action to remedy the situation.

For the first 25 years of federation, politicians and state public health authorities endeavoured to produce work towards a greater uniformity of their pure food regulations, but in 1927 abandoned the project after a long series of abortive attempts.

Unification of State Food Regulations

A new start was made in 1952 when the National Health and Medical Research Council set up its Food Standards Committee, which was to draw up draft food regulations suitable for uniform adoption in all six states. At the same time, the food processing industries of the Commonwealth had formed a common bond in the Food Technology Associations, one of which had formed in every state as a section of the State Chamber of Manufactures. These associations aim to "facilitate the exchange amongst members of the scientific and technical knowledge regarding the food and ancillary industries"; to serve the scientific and technical personnel of the industries, and to promote their technical advance; to raise the standard and quality, acceptability to consumers and prestige of Australian food products both in Australia and abroad; and to improve the general nutritional level of the Australian people. The Food Technology Associations are bound by their constitutions not to deal with matters relating to trade practices, prices, relations between employer and

employee, trade disputes and other matters of a commercial nature, except when such matters may be of general application to the industry and shall directly impinge on the scientific and technical aspects of the subject.

In 1949 the six FTA's formed the Council of Australian Food Technology Associations (CAFTA), which at once took a very active interest in the unification of state food regulations. Beginning with a "survey of inconsistencies" of state food regulations, CAFTA established an interstate consultative machinery, known as the "uniform procedure," which was designed to make sure that each association (and if possible no member of the FTA) would initiate in its own state only such new or changed food regulations as were "acceptable to both members of the other Associations and acceptable to all members of the particular branch of the food processing industry in its own State."

Without wishing to interpose themselves between any of their members and the health department in its state, they encouraged their members to use their good services in conjunction with applications for, or opposition to, changed and new food regulations.

The Food Standards Committee of the National Health and Medical Research Council now closely cooperates with the Council of Australian Food Technology Associations, which has set up a Technical Standing Committee with a public analyst as part-time secretary, using its interstate consultative machinery and the expert services of this committee. CAFTA produces draft regulations for the standards, packaging and labelling of foods, on which the Food Standards Committee draws as the basis of its operation.

Close liaison has been established with state health departments who substantially contribute to the work of the FSC.

The success of the scheme has become assured since the active cooperation has been assured of the State Food Advisory Committees, the statutory bodies whose consent state health ministers need before they can submit food regulations to their respective parliaments.

About two dozen food regulations have been uniformly adopted by all states or are about to be accepted and a similar number is in preparation. Uniformity of food legislation is coming fast to Australia and there is the machinery operating to keep it from reversing to the previous state of diversity of food regulations. **[The End]**

National Problems of Pure Food and Pure Food Legislation – United States of America

By GEORGE P. LARRICK, D.Sc.

Mr. Larrick Is Commissioner of Food and Drugs, United States Department of Health, Education, and Welfare. In His Absence His Paper Was Read at the Pure Food Centenary Conference by John L. Harvey, Who Is Deputy Commissioner of Food and Drugs.

WE ARE IN AN ERA of changes in the production and distribution of food. We have progressed from home-preserved fruits and vegetables, home-baked bread, and ice cut from frozen ponds and rivers, to refrigerated transportation and storage, frozen foods, and finally to the basic preparation of entire meals on the factory assembly line instead of the home kitchen.

Convenience foods have liberated the housewife from many hours in the kitchen, but she has lost control over the sanitary conditions under which such foods are prepared and the ingredients that go into them.

Our sanitation problems are now largely concerned with the procurement by processors of fit raw materials. Agricultural leaders and industry associations have joined in our efforts to educate farmers on how to keep their wheat, corn, milk, and field and orchard crops clean and free from unsafe residues of the chemicals used in their production, transportation and storage.

Modern food technology has made food additives a major concern. The Food, Drug, and Cosmetic Act of 1938 had put the burden of proof of harmfulness of an additive on the government, while foods containing unproven new ingredients could be distributed without safety clearance. Tolerances for deleterious additives were limited to

those actually needed or unavoidable, and had to be based upon cumbersome public hearings.

An amendment in 1954 corrected these faults for pesticides used on raw agricultural commodities. Those who sell or use these pesticides are now required to establish by scientific data that residues left under the proposed conditions of use will be safe, and tolerances are set by the Food and Drug Administration on the basis of usefulness rather than necessity. Hearings are no longer required.

On the whole, the new procedures have worked out smoothly. One difficulty encountered has been the lack of suitable analytical methods for some new chemicals. Another problem is that our inspection staff is too small to give adequate sampling coverage to check on products reaching the market. Seizures have been made of shipments of fresh and frozen leafy vegetables, because excessive residues resulted from growers applying pesticides contrary to directions. We are continuing our educational program to keep such misuses to a minimum.

Food-Additives Amendment of 1958

The food-additives amendment of 1958 also requires those who sell or use new additives to furnish safety data and analytical methods to the Food and Drug Administration. If proof is adequate, a tolerance regulation is issued, specifying permissible conditions of use. This new law covers substances directly added to food, such as emulsifiers and antioxidants, and also those that may get into the food from processing equipment, packaging materials, etc.

The new law forbids food additives that cause cancer when ingested by laboratory animals or which are found to be carcinogens by other suitable tests. This ban applies also to the addition of carcinogens to feeds for food-producing animals.

We have issued a number of lists of additives generally recognized by qualified experts as safe, or whose use had been previously sanctioned. A number of additives have been cleared through the submittal of the required safety data. And about 800 specific items or classes of items, have been granted extensions until March, 1961, to enable completion of tests or other research. In each extension it was necessary to show that another year of use would not endanger public health. Manufacturers or users of these items must establish their safety before March, 1961, or use must be discontinued until they do.

Many homemakers do not understand the role of food additives—why they are necessary in modern food technology or how they improve foods. Strange and complex chemical names in labels cause concern. Consumers have been frightened by alarmist articles and books into false conclusions about the safety of our food supply. Part of our task is to convince them that problems of food safety are being resolved in the favor of the consumer.

The color-additives amendment enacted July 12, 1960, will require manufacturers to retest questionable colors now in use. It provides for batch certification where necessary, and authorizes quantitative tolerances when needed to ensure safe use of colors in foods, drugs or cosmetics. It contains an anticancer clause similar to that for food additives. Previously, coal-tar colors for use in foods, drugs and cosmetics were subject to Food and Drug Administration clearance, but products could be certified only where it could be shown that the colors were completely "harmless," even though the amount actually used might appear to be safe. Recent pharmacological tests showed that a number of the colors previously allowed were not harmless per se, and it was necessary to remove them from the list of colors that could be certified. Under the new law some of these perhaps can be restored to the list of permitted colors after the manufacturers submit evidence on which to set safe tolerances.

Another of our problems is that of dangerous promotion of intrinsically harmless nutritional supplements as "cure-alls." Prolonged illness or even death may result when people rely upon the claims of "health food" lecturers and door-to-door peddlers instead of seeking medical attention. Fraudulent promotions also cause enormous economic losses estimated at $500 million a year, money which is often needed for nutritious common foods readily available throughout the country. Self-styled nutritionists often use mass psychology to scare people into buying products they do not need. Our educational efforts, in which we have been joined by many professional and food industry groups, are aimed at teaching the public to distinguish between nutrition fact and nutrition quackery.

Our legal requirements of course differ in some respects from yours. You permit foods to be imported into your country only if they meet your own regulations, as do we. We will be glad to furnish any information available about articles being shipped to your country whenever your governments request it. **[The End]**

The Integration of Food Research

By A. C. FRAZER, M.D., D.Sc., F.R.C.P.

The Author, Who Is Professor of Medical Biochemistry and Pharmacology at the University of Birmingham, Is President of the British Food Manufacturing Industries Research Association.

FOOD IS AN ESSENTIAL PART of the environment of all living creatures. The nature and the availability of food play a large part in the maintenance of health in each individual. Man has created special problems of food supply by urbanisation and overpopulation of many areas.

Food problems fall into three main categories—those concerned with the production of raw materials, the processing of food to make it more useful and more acceptable and those concerned with the effects of food on the consumer. Much research has been done in each of these fields; there is, however, still much to be done. Different disciplines are involved in those various fields and there is surprisingly poor integration between them.

Those concerned with the production of raw materials have been largely concentrated on factors affecting yields. Thus, strains have been developed that are more resistant to pests or disease, that store well or provide some other economic advantage. It is true that the question of palatability or suitability for use has also been taken into account, but such matters may be something of an afterthought. The effect on the consumer has rarely been considered in the struggle to improve raw materials. The problems of food production are not only concerned with the improvement of existing materials; there is also a need for over-all increase in the quantity of food available. There is probably sufficient carbohydrate, but fat is in relatively short supply; perhaps a more even distribution of the world's fat supplies might be better for all concerned. The supply of protein is a more serious

problem. It is difficult to see where an adequate supply of good class protein can be obtained. Pirie has suggested an ingenious use of leaf protein, which is nutritionally valuable and usually wasted. Other ideas involve the more efficient use of fish protein, or the recovery of protein from marine organisms, bacteria or yeasts. Whatever may be the final answer, it is of great importance that the proteins obtained should be easily and economically handled, that they should be palatable and that they should be nutritionally effective and harmless to the consumer.

An integral part of the production problem is effective harvesting, storage and distribution. This links up closely with the problems arising from preparative and processing measures. There has been a considerable move in recent years to carry the problems of production beyond the farm gate and to link up with the food technologists who are responsible for converting the raw materials into food. This conversion process involves the cleaning of the raw materials, the separation of edible from inedible portions, the removal of pests, control of infection or infestation and modification of materials to bring them into the most suitable form for use.

These processes are essential and their value to the community is often underestimated. No one with any knowledge about food would fail to appreciate the value of milling of cereals, pasteurisation of milk, separation of butter, exsanguination of certain forms of meat, refrigeration of fish or curing of ham. There are some, however, who seem to imagine that these and other processes ruin our food; this is not so. They are essential steps in the formation of food from raw materials, which would not be acceptable in their natural form.

Large-scale food production must call upon all the resources of modern science if it is to hold its own in a competitive world. Thus, the possibility of sterilising food materials by irradiation must be studied; the use of suitable preservatives, antioxidants or other agents that might help in food processing is not inherently objectionable provided that the welfare of the consumer is always kept in mind. If food can be supplied in the fresh state, so much the better. The circumstances of modern life, however, frequently preclude this. With increasing numbers of housewives doing a day's work away from home, the demand for partly prepared or ready-to-use foods is steadily rising.

It is obvious that any process applied to a food material may cause some modification in its nutritional properties. Thus, milling

causes the removal of certain nutrients from the flour, and the extent and scope of these losses varies with the rate of extraction. In my opinion, the reduction of a particular nutrient in a particular food material is not in itself a matter of importance. It only assumes importance if the food material concerned is an important source of that nutrient in the diet as a whole. Even this does not necessarily mean that the process need be condemned; it is sometimes wiser to fortify the food with the appropriate nutrient. This has been done in the case of thiamine in flour. Each case should be carefully considered on its merits.

Another aspect of the problems of food processes and the use of food additives is the question of direct or indirect toxicity. This can be guarded against by the application of suitable studies in experimental animals. A considerable amount of work has been and is being done in this field. There is no doubt that a reasonable opinion on the toxic hazards of any particular food additive or food process can be given. This will include an assessment of any possible carcinogenic risk.

Finally, we must consider the effect of food on the consumer. This has already been touched upon in relation to possible toxic effects of food additives, or alteration in the nutritional properties of food by processing. The problem is much wider than this, however. What does food itself do to the consumer? Much of the early work in nutrition was concerned with deficiencies. Nowadays we probably know for investigation of nutritional priorities and subclinical deficiency states. There is also a positive aspect of nutrition that has been less fully studied. There appears to be some effect on health of excessive fat intake; this may lead to earlier disposition of lipids in blood vessels and this condition may be one of the pre-disposing factors to ischaemic heart disease. There is no doubt that heart disease of this type has greatly increased in this and many other countries in recent years. The question whether this can be in any way attributed to the food consumed is a challenge to all interested in food science. There may be many other positive deleterious factors in our daily food which only future research will reveal.

These factors appear to affect many people; perhaps they may affect all. There are however, some food materials that are only harmful to particular individuals. Thus, some people cannot tolerate wheat gluten, while others are unable to metabolise the amino acid,

phenyl alanine. The effects of these metabolic faults may be disastrous. Our knowledge of these metabolic differences, which are largely genetically determined, has increased greatly in the last few years.

It is apparent that food research covers an immensely wide field. It is important, however, that new knowledge gained in one part of the field should be communicated to and understood by those working in some other area. Some machinery is needed that will ensure more effective integration between the agricultural scientist, the practical farmer, the chemists and physicists interested in applications in the food field, the biochemists and pharmacologists who may examine the nutritional or toxicological implications, the food technologist, who is concerned in providing the most acceptable food, and the doctor, who is interested in the health of the consumer. All these people and many others who may be involved in different aspects of these problems must share the same knowledge. The needs are obvious—more food research in all its aspects; closer integration between everyone in the food research field. **[The End]**

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